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ORGANIZATION OF A YUGOSLAV MARITIME METEOROLOGICAL SERVICE

Realizing the importance and value of maritime commerce, Yugoslavia has joined and will continue to join all international organizations working for its safety and improvement. One such organization is the International Meteorological Service.

The establishment of a meteorological service aboard ships is a new service which the Yugoslav Meteorogical Service must introduce. In 1947, the International Meteorological Service appealed to all member countries, especially maritime countries, to contribute to the limit of their ability to the strengthening and progress of maritime meteorological service, and to bear in mind that they are closely linked with the International Convention for Safety of Life at Sea, which Yugoslavia has also joined.

The establishment of a meteorological service on Yugoslav ships should be thoroughly understood and handled systematically and carefully from the beginning. The Maritime Meteorological Service should supply uniform services to other services, such as the Yugoslav Navy, which has unique and definite meterological needs which should be resolved in peacetime so the navy will be prepared in case of war. The same applies to the commercial fleet. Yugoslavia must therefore keep abreast of and utilize profitably advances in tech.ology and science and developments in the merchant marine and military naval technology relevant to analysis and forecasting of weather conditions. A Ship Meteorological Service should be organized as part of the Maritime Meteorological Service. Ships and stations should be classified as selected ships, auxiliary ships, other ships, coastal stations, automatic meteorological stations, radar service, aerological service, lighthouses, and buoys.

Selected ships would be equipped with complete installations of tested meteorological instruments. They would make observations, transmit reports as prescribed for international reports, transmitting in standard form during international synoptic hours when possible. Selected ships would transmit reports while en route. They would not transmit reports while in port, but would record observations on special forms.

- 1 -

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Auxiliary ships would be equipped with a small installation of tested meteorological instruments. They would report on areas where marine traffic is relatively light, either on instructions from the Maritime Meteorological Service or on request from other ships and meteorological centers, reporting especially on dangerous winds and other dangerous phenomena. They should utilize an abbreviated form of report and transmit during international synoptic hours as outlined in regulations of the International Convention for Safety of Life at Sea.

Other ships without special meteorological instruments would transmit reports on areas where marine traffic is relatively light, either on instructions from the Maritime Meteorological Service or on request when special weather conditions prevailed or were expected. The abbreviated form of report would be used, as outlined in regulations of the International Convention for Safety of Life at Sea; ordinary language could be used if necessary. It would be recommended for ships to transmit reports during international synoptic hours, but transmission at other hours which might be more convenient would also be acceptable.

Existing coastal stations in the network of hydrometeorological stations in the coastal area, and new stations which should be established where bad weather is customary and where maritime traffic is well developed, should be included. This is well under way, since most of the meteorological stations on the coast and islands are already a part of the network of the Maritime Meteorological Service.

Automatic meteorological stations should be set up in places where there is maritime traffic but where it is impossible to have observers, where the weather pattern is distinctive, or where interruptions in communications are likely at the very time data from a particular point are most needed, such as periods of high winds and seas. The same applies to setting up automatic meteorological stations on buoys.

Radar has not yet been used for meteorological purposes in Yugoslavia. A radar meteorological service would be extremely helpful in coastal shipping, fishing, port traffic, and similar operations, since damage caused by sudden changes in the weather could be eliminated.

The operation of the stations mentioned, as well as of buoys and radar service, would be planned and organized by the Maritime Meteorological Service.

The operation of lighthouses should be organized as efficiently as possible. Their location is very favorable for meteorological observation, for some are located exactly where bad weather is customary and where there is maritime traffic. A regular meteorological service should be established in some of them, with reports being transmitted at scheduled times.

The gathering and transmission of data would be done through the nearest collection center, utilizing existing communications or new radio and telephone connections, which should be set up. Some stations should sugistement their regular duties by watching for sudden changes in weather, reporting the beginning and end of bad weather by means of special international warning signals, such as flags or lights suspended in easily visible places.

A regular service, giving weather forecasts for coastal shipping as well as weather conditions on other routes, should be established on the coast. Reports would be transmitted every 3 hours; in case of sudden change in the weather, reports would be transmitted immediately without regard to the regular schedule. Reports would be transmitted in at least two languages. Maritime meteorological offices should be established in the chief ports, especially in Rijeka. Besides transmitting weather reports, these would handle the exchange

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- 2 -

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of publications with foreign countries and publish various reports on the utilization of meteorological data in maritime traffic. They would collect weather data, draw synoptic maps, and publish daily weather bulletins. They would also make regular inspections of new instruments, furnish new instruments and give help to observers on ships. This would apply to foreign as well as Yugoslav ships. Publications would be printed in at least two languages. In Split, these functions would be discharged by the Administration of the Maritime Meteorological Service.

The data furnished by ships at sea would be compiled and recorded in the Maritime Meteorological Service centers and would be the basis for a monthly bulletin such as those published by other maritime meteorological services. The need for this bulletin is very great, since it would help to educate seamen in meteorology and would maintain contact with seafaring meteorologists who want to work and cooperate, but lose contact with the meteorological service because of the type of length of their voyages. The material in such a bulletin would supplement Yugoslav meteorological work and studies.

The bulletin would be devoted chiefly to surveys of meteorological broadcasts to ships, notes on additions and changes in meteorological transmissions to seamen and hydroplanes, a listing of meteorological stations all over the world, information on port signals, news on treaties, conventions, and decisions relating to the safety of maritime and air traffic, notes on decisions and conventions in the maritime meteorological service, notes on publications which are important to the meteorological service and ships, and notes on innovations in meteorological technology. The bulletin would contain tabular and graphic climatological data for coastal zones and seas, tabular aerological data, and descriptions of weather conditions on the Adriatic and other seas. Articles might be included on the operation and maintenance of aneroid barometers, the use of meteorological instruments in making local predictions on the open sea, distinctive and dangerous phenomena on oceans, etc. The bulletin would also publish photographs of distinctive weather phenomena taken either ashore or on beard ship.

Personnel for meteorological service on ships, corstal stations, and lighthouses would be obtained from the Maritime Meteorological Service Center, while other meteorological observers would be obtained from maritime schools. Meteorological education in maritime schools would be so arranged that most of the training would be in practical meteorology. Instruction in theory would also be necessary, but should be reduced to a minimum.

Education in maritime schools should be divided into (1) instruction in the techniques of observation and preparation and interpretation of meteorological dispatches and synoptic maps and (2) the principles of meteorology. A teaching manual should be written for use in maritime schools. A meteorological station should be established in each school for practice in making observations, reading instruments, and interpreting synoptic maps. In training schools for future ship's officers, the charting of synoptic maps should be taught. Photography of extraordinary meteorological phenomena also should be taught.

Selected ships should be equipped with a mercury barometer, aneroid barometer, psychrometer, barograph, therometer for measuring sea temperature, and ar anemometer. Other ships should be equipped with an aneroid barometer, barograph, sea-temperature thermometer, and anemometer.

Supervision and improvement of meteorological observations should be done by the Maritime Meteorological Service Center by periodic inspection, instruction on board ship, or by letter. STAT



- 3 -

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Yugoslavia already has a meteorological station network ashore and a well developed synoptical and climatological center in Split. The synoptical center follows weather developments; the climatological center gathers data from various locations along the coast; and the metecrological stations are located at strategic places along the coast. These are all the fields and types of work required on a larger scale for the Maritime Meteorological Service. The first step must be the planning and establishment of radio, telephone, and radar service, which should be so organized that nothing short of extreme emergencies can prevent its continuous operation. Its stability will be the chief guarantee for the solution of problems involved in establishing the Maritime Meteorological Service.

There is scarcely any meteorological literature on the Adriatic. Experience and word-of-mouth knowledge are the chief sources for information on the Adriatic. Yugoslavia also needs literature on foreign seas and weather. Although older seamen have an extensive and sound knowledge of weather on the Adriatic and on the open sea, greater utilization of technical devices and gradual depletion in the lanks of personnel are making the handing down of knowledge by word of mouth and learning by experience play a much smaller part.

The new generation of seamen is in no position to acquire basic knowledge of the sea and its weather from experience because of accelerated training and its immediate application in practice.

Yugoslavia must therefore undertake a well planned and efficient program to collect the knowledge of experienced foreign seamen and compile, record, edit, and publish the gethered material. In the near future, Yugoslavia must undertake the recording and compilation of hydrometeorological maps.

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- 4 -

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